

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A visual system, comprising:
a CCD or CMOS matrix having a sensitive area, and
a plurality of optical devices with different directions and/or fields of view and/or modes of optical separation,

wherein said sensitive area of the matrix is divided into a plurality of separated sub-areas designed for different specific functions, part of said plurality of separated sub-areas being dedicated to scene monitoring and part of said plurality of separated sub-areas being dedicated to detection of environmental parameters, said division being achieved by said plurality of optical devices,

wherein a fog function is performed both with a dedicated sub-area, with an active technique for local fog detection, and with passive technique for fog bank detection in another sub-area corresponding to the one dedicated to front monitoring or contained therein.

2. (previously presented): The visual system according to claim 1, wherein the system is installed in a motor vehicle on a front portion of an inner rear-view mirror of the motor vehicle and performs one or more functions among: rain detection, windscreen misting detection, fog detection, dusk detection, tunnel detection, vehicle meeting detection, and monitoring of a scene in front of the vehicle.

3. (previously presented): The visual system according to claim 1, wherein the matrix is a linear or logarithmic, monochromatic (or color) VGA CMOS matrix.

4. (previously presented): The visual system according to claim 1, wherein at least one of the sub-areas is designed for front monitoring.

5. (currently amended): The visual system according to claim 4~~1~~, wherein one of the sub-areas is the sensitive area of the matrix also has a specific sub-area for rain and misting detection.

6. (currently amended): The visual system according to claim 5~~1~~, wherein ~~the sensitive area of the matrix further comprises an additional specific sub-area for vehicle~~one of the sub-areas is for meeting detection.

7. (currently amended): The visual system according to claim 6~~5~~, wherein the sub-area dedicated to rain detection ~~functions with~~includes an emitter.

8. (currently amended): The visual system according to claim 7, wherein said sub-area dedicated to rain function is also dedicated to wind-screen misting function.

9. (currently amended): The visual system according to claim 8~~1~~, wherein dusk function is performed by a specific sub-area of a CMOS matrix.

10. (currently amended): The visual system according to claim 9~~1~~, wherein the sub-area dedicated to front monitoring also performs a tunnel function ~~is performed by using part of the area dedicated to front monitoring function.~~

11. (canceled).

12. (currently amended): ~~The visual system according to claim 11~~ A visual system, comprising:

a CCD or CMOS matrix having a sensitive area, and

a plurality of optical devices with different directions and/or fields of view and/or modes of optical separation,

wherein said sensitive area of the matrix is divided into a plurality of separated sub-areas designed for different specific functions, part of said plurality of separated sub-areas being dedicated to scene monitoring and part of said plurality of separated sub-areas being dedicated to detection of environmental parameters, said division being achieved by said plurality of optical devices,

wherein vehicle meeting function is performed by using one of two dedicated sub-areas ~~or~~ and a sub-area dedicated to front monitoring, in one of a color matrix ~~and~~ in a monochromatic matrix by means of optical filter laid with a discretization degree at pixel level, though only in the ~~area or~~ sub-area of the matrix dedicated to front monitoring.

13. (currently amended): ~~The visual system according to claim 1~~ A visual system,
comprising:

a CCD or CMOS matrix having a sensitive area, and

a plurality of optical devices with different directions and/or fields of view and/or modes
of optical separation,

wherein said sensitive area of the matrix is divided into a plurality of separated sub-areas
designed for different specific functions, part of said plurality of separated sub-areas being
dedicated to scene monitoring and part of said plurality of separated sub-areas being dedicated to
detection of environmental parameters, said division being achieved by said plurality of optical
devices,

wherein the matrix sensor has a protection window made of one of glass or and
transparent plastic, also acting as support for one or more optical fibers and a prism carrying to
selected sub-areas of the matrix an optical signal picked up by the prism.

14. (previously presented): The visual system according to claim 13, wherein said
optical fibers have proximal ends fitted into holes made into said protection window.

15. (currently amended): ~~The visual system according to claim 13~~ A visual system,
comprising:

a CCD or CMOS matrix having a sensitive area,

a plurality of optical devices with different directions and/or fields of view and/or modes
of optical separation, wherein said sensitive area of the matrix is divided into a plurality of
separated sub-areas designed for different specific functions, part of said plurality of separated

sub-areas being dedicated to scene monitoring and part of said plurality of separated sub-areas being dedicated to detection of environmental parameters, said division being achieved by said plurality of optical devices, one of said sub-areas being dedicated to front monitoring and others of said sub-areas being dedicated to rain, misting, fog and dusk functions, and,

~~further comprising~~ means for optical insulation between the sub-area dedicated to front monitoring and ~~the said plurality of separated~~ sub-areas dedicated to rain, misting, fog and dusk functions, the means for optical insulation partially covering ~~of~~ a surface of a matrix protection window, on the side towards the matrix, with a layer of absorbing or reflecting material.

16. (currently amended): The visual system according to claim 13, further comprising means for optical insulation of the sub-area dedicated to rain function from the influence of other functions, said means for optical insulation including partial covering prism faces with a layer of one of absorbing ~~or~~ and reflecting material, and a hole made into the optical window, in which the hole inner walls are covered.

17. (currently amended): The visual system according to claim 13, wherein a the sub-area dedicated to rain function receives the optical signal from an optical system comprising, in series, a prism with optical insulation, a filter and an objective with an optical axis orthogonal to windscreen.

18. (currently amended): The visual system according to claim 13, wherein a the sub-area dedicated to windscreen misting function receives the optical signal from an optical system

comprising a prism with optical insulation, a filter and an objective with an optical axis orthogonal to wind-screen.

19. (currently amended): ~~The visual system according to claim 13~~ A visual system,
comprising:

a CCD or CMOS matrix having a sensitive area, and

a plurality of optical devices with different directions and/or fields of view and/or modes
of optical separation,

wherein said sensitive area of the matrix is divided into a plurality of separated sub-areas
designed for different specific functions, part of said plurality of separated sub-areas being
dedicated to scene monitoring and part of said plurality of separated sub-areas being dedicated to
detection of environmental parameters, said division being achieved by said plurality of optical
devices, wherein one of the sub-areas is a sub-area dedicated to dusk function and receives the an
optical signal through an optical fiber.

20. (currently amended): ~~The visual system according to claim 13~~ A visual system,
comprising:

a CCD or CMOS matrix having a sensitive area, and

a plurality of optical devices with different directions and/or fields of view and/or modes
of optical separation,

wherein said sensitive area of the matrix is divided into a plurality of separated sub-areas
designed for different specific functions, part of said plurality of separated sub-areas being
dedicated to scene monitoring and part of said plurality of separated sub-areas being dedicated to

detection of environmental parameters, said division being achieved by said plurality of optical devices, wherein one of the sub-areas is a sub-area dedicated to tunnel function and receives the an optical signal through an objective dedicated also to front monitoring function.

21. (currently amended): The visual system according to claim ~~13~~1, wherein ~~a~~the sub-area dedicated to fog function, based on active technique, receives ~~the~~an optical signal through an optical system comprising one of a ball ~~or~~ and grin lens ~~or even no lens at all~~ together with an end of an optical fiber, ~~possibly with another grin or micro-optical lens or even with no lens at all on the other end of the optical fiber~~, together with a high-pass/interferential filter, and a collection lens.

22. (currently amended): The visual system according to claim ~~13~~21, wherein ~~a~~the sub-area dedicated to fog function, based on passive technique, receives the optical signal through an objective dedicated also to front monitoring function.

23. (previously presented): The visual system according to claim 13, wherein two sub-areas dedicated to vehicle meeting function receive the optical signal through filters together with an objective.

24. (previously presented): The visual system according to claim 13, wherein in the variant of vehicle meeting function based on the use of a sub-area dedicated to front monitoring in a color matrix or in a monochromatic matrix, the optical signal is collected by means of a same objective, which is dedicated to front monitoring function.

25. (previously presented): The visual system according to claim 13, wherein a sub-area dedicated to front monitoring function receives the optical signal through an objective with optical axis shifted with respect to matrix center.

26. (previously presented): The visual system according to claim 1, wherein some sub-areas are reserved for unused pixels necessary as additional separation between used sub-areas.